



A speleothem-based chronology for the Iberian margin marine-core record spanning 380 - 196 ka: implications for the timing of Terminations IV and III

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Antrò del Corchia is a large, well-decorated cave located in the Alpi Apuane of northwestern Tuscany, Italy. Previous studies from the cave covering the period between Termination II and the early last glacial show that speleothem oxygen isotope ratios ($\delta^{18}\text{O}$) closely track sea-surface temperature (SST) variations recorded in marine sediments cored off the Iberian margin (cores ODP-977A, MD95-2042 and MD01-2444). This allows the U-series-based Corchia speleothem chronology to be applied to the Iberian marine record, thereby generating a refined time scale for its full suite of marine palaeoclimate proxy data. On this new time scale, the pattern of benthic $\delta^{18}\text{O}$ changes argues against forcing of Termination II by northern hemisphere summer insolation intensity, and supports previous U-series-based studies on coral and marine sediments that invoke a somewhat earlier deglaciation and sea-level rise. We have applied the same approach to a stacked Corchia speleothem $\delta^{18}\text{O}$ record spanning the period 380 to 196 ka, yielding the first U-series age estimates for the timing of benthic Terminations IV and III. We discuss the orbital forcing implications of these results and compare the radiometrically constrained Iberian marine series with Antarctic ice-core records.